

HABITAT COMMENTS

Land Management Issues: Habitat Protection and Restoration for Salmon

The following comments address the habitat prong of the Draft Biological Opinion's Reasonably Prudent Alternative. The comments review the feasibility of proposed habitat measures, the individual and cumulative effectiveness of the measures to produce survival and recovery improvements, and the reasonableness of NMFS in relying on such measures to reach its no jeopardy opinion. The comments first review NMFS' use and reliance on the studies of Fiest et al. (in prep), addressing the adequacy of this study to form the basis for NMFS' conclusions regarding the sufficiency of habitat restoration measures in general. Second, the comments address the sufficiency of ICBEMP and NMFS' reliance on this plan for as the primary source for habitat measures on federal lands. Finally, the comments review the feasibility and effectiveness of proposed habitat measures for private lands.

In general, the comments conclude that proposed habitat measures (1) are unlikely to be implemented as proposed; (2) even if fully implemented, are still insufficient to produce net improvements in salmon survival and recovery; and (3) are inadequate to mitigate the effects of the hydrosystem as claimed.

I. USE OF FEIST ET AL. IN ASSESSING HABITAT PRODUCTIVITY

NMFS et al. (2000) improperly distorts the results of Fiest et al. (in prep.) to provide erroneous and highly misleading estimates of increased redds with presumed remediation of the adverse effects of diversion and livestock grazing in NMFS, Conservation of Columbia Basin Fish: Draft Basin-wide Salmon Recovery Strategy -- An Update of the All-H Paper (July 27, 2000) (hereinafter: "All-H Paper"), p. 34, Table B, 2000. This use of Feist et al. (in prep.) is a gross distortion for several reasons.

First, the results of Fiest et al., (2000) cannot be used to estimate future change in spawner abundance/redd density due to change in just a few of the land use factors that were found to correlate with redd density. Almost all of the predictor variables analyzed exhibited significant cross-correlation, making it impossible to credibly estimate any improvement in salmon abundance or redd density resulting from the change in a single land use variable.

Likely changes in redd density could only be legitimately estimated from functional relationships with land use variables if, and only if, the relationships were based on the analysis of redd counts in largely homogenous watersheds among homogenous years, using variables that were not cross-correlated. The work of Feist et al. does not meet this criteria. Fiest et al. (in prep.) is based on redd counts in watersheds with heterogeneous landscape attributes (which implicitly made the analysis of landscape

attributes possible) and in heterogeneous years. The paper clearly evinces heterogeneity among years because the correlation of the predictor variables with redd density deviated considerably among years during the period of study ('60-'77). As the paper explicitly presents (Feist et al., Tables 3a and B, in prep.) many of predictor variables analyzed were highly cross-correlated, including grazing and diversions. Feist et al. (p. 15, in prep.) clearly states, "Because there is correlation between predictor variables, causal relationships cannot be inferred." The All-H Paper completely and wrongly ignored this statement by using the results to estimate changes in redd abundance based on assumed correction of diversion and grazing effects, because such estimate explicitly assumes causal relationships. For these reasons alone, NMFS assertions based on distorted extrapolation of the results of Feist et al. are scientifically untenable.

Second, the All-H paper incorrectly extrapolates the Feist et al. (in prep.) beyond the scale of analysis. Most of the index reaches analyzed by Feist et al. were in watersheds largely under federal ownership and management. NMFS incorrectly uses these results to assert that efforts on non-federal lands will boost redd numbers within the examined reaches. Due to scale mismatch, this extrapolation is not legitimate and is misleading. Further, conditions and trends on non-federal and federal lands are likely to diverge considerably, which makes the extrapolation still more untenable. For these reasons, the results of Feist et al. cannot be used to estimate the likely change in redd density or survival that will accrue, even if NMFS' future efforts were likely to be rapidly implemented and effective on federal lands (neither of which can be reasonably assumed based on NMFS track record at protecting and restoring salmonid habitats). In this regard, the All-H Paper lacks credible quantitative bases for asserting that habitat restoration efforts will improve salmon survival to a degree needed to reverse the current trend towards salmon extirpation.

Third, NMFS' use of the results of Feist et al. is untenable because the results are not applicable to current conditions. Feist et al. only found a correlated relationship between some of the predictor variables and redd density from '60-'77. **Nothing** in Feist et al., indicates that there is any correlated or functional relationships between habitat variables and redd density in the Salmon River after 1977 or under present conditions. Post-'77 data was not analyzed and the prediction equations were not tested on data from post-'77. Therefore, Feist et al., provides no foundation for assertions that habitat improvement, if assumed to occur, would significantly boost salmon survival and redd numbers in the Snake River basin, especially given the high levels of mortality caused by the hydrosystem. To the contrary, Feist et al. hints that the relationships found between habitat attributes and redd density break down after 1977 and are likely inapplicable after that date. Feist et al., (p. 11) notes that major hydropower changes began around 1977 (actually major changes occurred from '68-'72, but probably required a generation or two of salmon to become manifest in redd counts) and that post-77 data was not used to develop or test the prediction relationship between habitat attributes and redd densities because Salmon River populations began to dramatically decline making it more difficult to detect patterns in habitat use.

The post-77 redd count decline observed by Feist et al. is not merely artifice. The ubiquitously low and declining redd counts in most habitats indicates that whether pristine or highly degraded, the primary control on spawner abundance is downstream, and is most likely mortality at the hydroelectric system. This indicates that the relationships between habitat conditions and redd density found by Feist et al. are without basis after 1977. It also indicates that since the relationships between redd density and habitat attributes break down after 1977 due to declines in populations to homogeneously low levels, downstream mortality swamps the relationship between habitat conditions and redd counts at the regional scale. This indicates that habitat rehabilitation alone, even if successful (which is highly unlikely), cannot prevent salmon extirpation without major increases in survival throughout the hydrosystem. This undermines NMFS's assertions in All-H Paper.

The CRITFC will soon perform an analysis of redd count data in the Salmon River from 1977 to present using methods parallel to Feist et al. We believe that this will show that the land use variables found to be correlated with spawner abundance from '60-'77 are no longer correlated from '77-present, thus indicating that mortality at the hydroelectric system now thoroughly swamps the relationship between habitat quality and spawner abundance at the regional scale and demonstrating that NMFS's proposed approach in the All-H Paper is countermanded by available evidence.

Fourth, the results of Feist et al. indicate that grazing and water diversions were not the best predictors of redd density. The "best fit" model used air temperature, naturally non-forested riparian vegetation, and precipitation. Other "best fit" candidates included the amount of granitic geology and hillslope gradient. Thus, even at face value, the All-H Paper distorts the results of Feist et al. to attempt to reach the incorrect conclusion that efforts on non-federal lands will effectively increase salmon survival on the subbasin level to a degree that will reverse current steep declines and avoid extirpation. These conclusions are without basis and it cannot be assumed that the approach in All-H Paper will even result in the protection and restoration of salmon habitats.

II. ADEQUACY OF ICBEMP

For federal lands, the approach in the All-H Paper relies on the assumption that ICBEMP will adequately protect existing high quality habitats and restore priority habitats. This reliance is improper. ICBEMP fails to incorporate the measures that credible assessments have repeatedly concluded to be necessary to protect and restore salmon habitats. These measures include the following:

- 1) Aquatic emphasis areas where only restoration activities occur (no vegetation removal, mining, road construction, or grazing).
- 2) Full protection of all roadless areas greater than 1000 acres from mining, logging and road construction.

- 3) Full protection of riparian areas of at least 300 feet in width from logging, thinning, mining and road construction.
- 4) Suspension of grazing and other on-going activities until conditions in affected salmon habitats are monitored and on-going suspension until monitoring indicates that habitat standards are met.
- 5) Suspension of additional land-disturbing activities unless monitoring indicates habitat conditions are met and the activities comply with land use standards for protection of aquatic emphasis watersheds and roadless and riparian areas.
- 6) An aggressive program of road obliteration.

Since ICBEMP fails to incorporate these elements, it is likely to have the same consequences for salmon as federal land management has had for the past few decades, unabated by NMFS consultations: increased intensity and extent of degradation in many areas, and severely impeded restoration in all areas with a legacy of watershed damage and on-going grazing.

Notably, NMFS has no basis for assuming that federal land management actions subject to consultation have protected salmon habitat. It has done nothing to ensure that monitoring for effectiveness is uniformly and properly collected and analyzed. To date, no system of effectiveness monitoring for USFS/USBLM grazing activities has been developed, much less implemented (USFS and USBLM, p. 3, 1999). NMFS has undertaken no analysis of existing data to determine if activities subject to consultation have protected habitats and allowed recovery of damaged critical habitat on federal lands or affected by federal land management. Nor has NMFS undertaken analysis of habitat conditions and trends on federal lands or those affected by federal activities to determine if cumulative effects have been reined in enough to allow habitat recovery. To date, NMFS has not even required monitoring to establish the environmental baseline. For instance, there is still no effectiveness monitoring of fish habitat conditions in place for the Northwest Forest Plan, adopted in 1994, even though the USFS and NMFS explicitly stated that monitoring and adaptive management was a key aspect of the aquatic habitat protection strategy.

It follows that NMFS has no reasonable basis for assuming that habitat damage by federal land management is not continuing. To the contrary, available information indicates that conditions on federal land continue to trigger significant salmon and steelhead habitat degradation (McClellan et al., 1997; Rhodes and Huntington, 2000). NMFS has been supplied documentation of habitat damage caused by actions subject to conferencing (Summit Timber Sale on the Malheur National Forest) and consultation (Chicken Creek Grazing on the WWNF) corroborated by its own field reviews, but the agency has failed to take any action to assure that such damage is not repeated and is avoided elsewhere. NMFS' response to documented habitat damage indicates that

although NMFS consistently trumpets adaptive management, the agency is incapable of implementing it or protecting salmon habitats from damage.

NMFS has also allowed damaging livestock grazing on federal lands to go forward with consultation. Grazing clearly damages fish habitat, as numerous studies attest. Summer and fall season grazing is particularly incompatible with the recovery of streambank stability and riparian vegetation (Elmore, 1992), yet summer and fall season grazing is allowed to continue on federal lands despite consultation. On-going damage to habitats for listed anadromous fish species is continuing on a large scale on federal lands in the John Day and Snake River basins (J. Rhodes, CRITFC Hydrologist, pers. comm.). Notably, NMFS does not provide a single example, from anywhere in the basin, of a proposed change in land management on federal lands that is likely to lead to improved habitat conditions.

Where habitat "protections" exist on federal land, habitat management suffers from chronic lapses in monitoring and responsive actions. For example, the "1998 Monitoring and Evaluation Report for the National Forests of the Blue Mountains (Malheur, Umatilla, and Wallowa-Whitman National Forests)" published 1999 sets forth the percentages of grazing allotments that are in compliance with the existing Forest Plans:

	Malheur	Umatilla	Wallowa-Whitman
Percent of active allotments with AMPs that are Forest Plan sufficient	9%	21%	20%

In other words, about 80% of the grazing allotments in NE Oregon, including tributaries of the Snake River, were out of compliance with existing Forest Plans in 1998. Consider also the following statement from the same report:

The Umatilla NF completed four AMPs based on prior NEPA decisions. There was no funding for additional range inventory or NEPA planning efforts in FY 98 nor was any received to begin work for FY 99.

So not only are numerous allotments out of compliance, there will be significant problems in bringing allotments into compliance due to the absence of monitoring and management funds.

The consequence salmon habitat degradation due to grazing is widespread. In the Malheur NF consider the following report from the Prairie City Ranger District regarding monitoring anadromous fish habitat:

With cattle grazing, meeting riparian management objectives is more difficult and is not typically achieved. Most of the MA 3A areas are experiencing very slow recovery of continued declines due to overgrazing or trampling by cattle.

Obviously there is room for improvement in the management of federal lands for salmon habitat protection.

Finally, it must be noted that regardless of whether federal land management agencies can achieve ICBEMP's habitat protection goals, the deleterious effects of the hydrosystem severely limit any benefit stemming from the plan's habitat protections. According to the ICBEMP "Questions & Answers for the Supplemental Draft EIS," published in response to comments on the ICBEMP Supplemental Draft EIS, March 2000:

In analyzing the effects of the Supplemental Draft EIS alternatives on anadromous fish populations we found that outcomes for anadromous fish above the dams in the Snake River and Upper Columbia river showed minor to no improvements as a result of the high uncertainty associated with migrant survival.

This statement appears to succinctly capture two policies that underlie ICBEMP:

- 1) Improvements in hydropower survival are necessary to recover Snake River salmon stocks and habitat has little to contribute.
- 2) With regard to salmon habitat protection, the federal land managers do not intend to increase protection levels from the status quo.

While it is true that recovery of Snake River salmon cannot be achieved solely through habitat protection, this truism must not be used as an excuse to do nothing. However, by relying on ICBEMP, the All-H Paper fails to provide for any meaningful habitat protections on federal lands.

III. FEASIBILITY OF PROPOSALS FOR RESTORING HABITAT WITHIN PRIVATE LANDS

For several reasons, NMFS' proposed approach on non-federal lands is also unlikely to have significant and rapid beneficial effects on salmon populations. First, efforts to protect productive areas, address diversions, increase tributary flows and reduce grazing pressure will not be implemented rapidly. The relevant "action" elements prescribe processes, not actions, that *might* lead to action sometime in the future (e.g. NMFS Draft Bi-Op., pp. 111). These process actions include setting up funds for land acquisition and conducting sub-basin assessments. Plainly, these processes will take time and any resulting action is likely to be lagged considerably. Second, the opportunity to take some of the actions may be considerably limited. For instance, acquiring areas with productive habitat in risk of degradation requires a willing seller. Such opportunities are likely to be sporadic and limited.

Third, even if implemented, the measures may have extremely limited benefits for habitat conditions and salmon survival. Habitat conditions are shaped by the cumulative

effects of land use and natural watershed attributes operating at the watershed scale. There is no good evidence that limited efforts to restore flows and/or reduce the negative effects of grazing will more than offset continued cumulative degradation from existing conditions (agriculture, urbanization, grazing, etc.). Further, limited efforts to restore flows and reduce negative grazing effects, even if successful, may be more than offset by additional damage from additional activities (e.g. expansion of agriculture, increased urbanization of riparian areas, increased logging, etc) combined with existing conditions on non-federal lands.

To date, NMFS has failed to insure that actions on private lands do not exacerbate and intensify habitat degradation and additional reduction in salmon survival. The most current "4D rules" allow considerable on-going degradation of salmon habitat by forestry (Western Division of the American Fisheries Society and the Northwest Chapter of the Society for Ecological Restoration, 2000) and urbanization. Unless NMFS can insure that degradation caused by cumulative effects will be rapidly stemmed, incremental efforts to increase riparian protection, boost tributary flows, treat diversions, and reduce the effects of grazing, will not result in a net improvement in habitat conditions or salmon survival. Available evidence and NMFS' track record more than amply indicate that NMFS cannot insure that watershed-level adverse cumulative effects on salmon habitat will not increase or remain at levels that effectively pre-empt relatively small-scale habitat improvements (those proffered in the All-H Paper) such that overall negative land use effects on salmonid habitat are reduced.

Notably, arresting and reversing the negative cumulative effects of land use on non-federal lands would require the same set of measures as needed for federal lands. As previously described, this would require the suspension of land disturbance in degraded systems, full protection of riparian areas, and suspension of other on-going activities that are currently degrading salmon habitat. Since NMFS has failed to require such approaches on federal land, it is ludicrous to believe that NMFS could implement this on non-federal lands, especially given NMFS' lackluster track record. Therefore, it is extremely unlikely that NMFS' incremental proposed measures, even if effectively implemented, would result in improved habitat conditions and increased salmon survival.

Fourth, even if properly and rapidly implemented with the effects not swamped by other cumulative effects, the benefits of habitat measures will be slow to accrue and will, at best, have nominal effects over the short term (e.g. 10 years). NMFS concedes in the All-H Paper (p. 11) that any potential benefits from reduced grazing pressure or riparian rehabilitation efforts will be extremely slow to accrue, if they accrue at all. This issue alone indicates that any improvement in tributary habitat and associated survival will be at best minimal over the next decade and negligible over the next five years.

Fifth, it is unlikely that the incremental measures to improve tributary habitat will be effectively applied. Riparian grazing would have to be eliminated to ensure improvement in riparian conditions that could benefit salmonid habitats. NMFS has not required this on highly damaged federal lands and instead has allowed grazing to cause annual damage to riparian zones and fish habitat, thereby preventing recovery.

Therefore, it is highly unlikely that NMFS will effectively reduce the negative effects of grazing on non-federal lands.

The proposed acquisition of currently productive habitats at risk of degradation, if implemented, may prevent degradation, but it will not increase habitat quality and salmonid survival in tributaries. Efforts to increase tributary flows may also have limited benefits, especially in Idaho, where there is no legal mechanism for maintaining any level of instream flows. Even in Oregon and Washington, where minimum instream flow regulations exist, they do not prevent withdrawal of increased flows by senior appropriators, under any condition, or junior appropriators where instream flows exceed the regulatory minimum. Thus, the efforts are not likely to be effective.

Sixth, it will be impossible to implement adaptive management, because it will be impossible to ascertain the effectiveness of efforts to improve habitat conditions over a five to ten year period. NMFS concedes that, even in the likely event that efforts are successful, benefits would be difficult to measure over a 10 year period (All-H Paper, p. 11). This alone usurps NMFS incorrect assertion that effectiveness can be determined by monitoring. However, this problem is compounded by NMFS' current inability to even identify performance standards (All-H Paper, p. 11). Such standards remain to be developed. A meaningful monitoring approach is also lacking. Therefore, NMFS has no concept of existing baseline conditions in habitats that will be treated and will not until well after performance standards and monitoring methods have been developed. The latter is likely to require several years at best. After more than 5 years after implementation of the Northwest Forest Plan and consultation on the Land Resource Management Plans in the Snake River basin, NMFS has yet to insure a comprehensive approach to effectiveness monitoring on these federal lands. NMFS has similarly failed to develop performance standards for these federal lands. Thus, it is extremely unlikely that NMFS will be able to develop and implement performance standards and monitoring for non-federal lands in a timely fashion. For these combined reasons, NMFS will not be able to ascertain the effectiveness of its proposed actions in a timely manner. This completely usurps its unfounded promises to ascertain the effectiveness of habitat improvement measures in a timely manner, and adjust the composite approach as needed to prevent on-going salmon extinction.

AUTHORITIES

Elmore, W., 1992. Riparian responses to grazing practices. *Watershed Management: Balancing Sustainability and Environmental Change*, pp. 442-457, Springer Verlag, New York.

Feist, B., Steel, E., Pess, G. and Bilby, R., *in. prep.*, 2000). A coarse-scale, spatially explicit model for predicting Pacific salmon abundance as a function of land cover and land use in the Salmon River, Idaho, US. NMFS, Seattle, Wa.

McCellan, D.E. and six others. Assessment of the 1995 and 1996 Floods and Landslides on the Clearwater National Forest. Clearwater National Forest, Orofino, ID.

Rhodes, J.J. and Huntington, C. 2000. Annual Project Report to BPA: Watershed Evaluation and Aquatic Habitat Response to Recent Storms. BPA, Portland, OR.

USFS and USBLM, 1999. Grazing Implementation Monitoring Module, April 7, 1999. USFS, Portland, Or.

Western Division of the American Fisheries Society and the Northwest Chapter of the Society for Ecological Restoration, 2000. Review of the 29 April 1999 "Forests and Fish Report" and associated "Draft Emergency Forest Practice Rules"